

Table of Contents	Page i
1. Introduction	1-1
1.1 Related Documents	1-1
1.2 The Technical Chapters.....	1-2
1.3 Why California Needs Energy Efficiency Standards.....	1-3
1.4 What's New for 2008	1-5
1.5 Scope and Application.....	1-7
1.5.1 Building Types	1-7
1.5.2 Historical Buildings	1-9
1.5.3 Exempt Buildings.....	1-11
1.5.4 Building Systems Covered	1-12
1.5.5 Additions, Alterations and Repairs	1-12
1.6 Mandatory Measures and Compliance Approaches.....	1-16
1.6.1 Mandatory Measures.....	1-17
1.6.2 Prescriptive Packages	1-17
1.6.3 Performance Approach.....	1-18
1.7 Climate Zones.....	1-19
1.7.1 Building Location Data.....	1-19
1.8 Conditioned Floor Area.....	1-20
1.9 Where to Get Help	1-21
1.9.1 Energy Commission Publications and Support	1-21
1.9.2 Training Opportunities	1-23
1.9.3 Energy Consultants	1-24
1.9.4 Online Videos	1-24
1.9.5 HERS Raters and Providers.....	1-24
2. Compliance and Enforcement.....	2-1
2.1 Overview	2-1
2.2 Compliance and Enforcement Phases	2-2
2.2.1 Design Phase	2-3
2.2.2 Permit Application.....	2-4
2.2.3 Plan Check	2-5
2.2.4 Building Permit	2-6
2.2.5 Construction Phase	2-6
2.2.6 Enforcement Agency Field Inspection	2-7
2.2.7 Field Verification and/or Diagnostic Testing	2-8
2.2.8 Approval for Occupancy	2-10

2.2.9	Occupancy.....	2-10
2.3	Energy Standards Compliance Documentation.....	2-10
2.3.1	Building Permit Phase Documentation	2-11
2.3.2	Construction Phase Documentation (CF-6R)	2-12
2.3.3	Field Verification and/or Diagnostic Testing Documentation (CF-4R)	2-15
2.3.4	Compliance, Operating, and Maintenance, and Ventilation Information to be Provided by Builder.....	2-15
2.4	Roles and Responsibilities.....	2-17
2.4.1	Designer	2-17
2.4.2	Documentation Author.....	2-18
2.4.3	Builder or General Contractor.....	2-19
2.4.4	Specialty Subcontractors.....	2-20
2.4.5	Enforcement Agency	2-21
2.4.6	HERS Provider	2-24
2.4.7	HERS Rater.....	2-25
2.4.8	Third Party Quality Control Program	2-28
2.4.9	Owner.....	2-29
2.5	HERS Field Verification and Diagnostic Testing.....	2-30
2.5.1	Measures Requiring HERS Field Verification and Diagnostic Testing	2-30
2.5.2	Verification, Testing and Sampling	2-31
2.5.3	Initial Model Field Verification and Diagnostic Testing	2-32
2.5.4	Group Sample Field Verification and Diagnostic Testing	2-32
2.5.5	Re-sampling, Full Testing and Corrective Action	2-34
2.5.6	Installer Requirements and HERS Procedures for Alterations	2-35
2.5.7	For More Information	2-36
3.	Building Envelope Requirements.....	3-1
3.1	Overview.....	3-1
3.1.1	Introduction.....	3-1
3.1.2	Building Orientation	3-2
3.1.3	What's New for 2008	3-2
	Default Temporary Label	3-3
3.2	Fenestration.....	3-4
3.2.1	Relevant Sections in the Standards	3-4
3.2.2	Mandatory Measures.....	3-5
3.2.3	Prescriptive Requirements	3-13
3.2.4	Compliance Options	3-18

Table of Contents	Page iii
3.2.5 Compliance and Enforcement	3-25
3.3 Insulation	3-27
3.3.1 Insulation General Mandatory Measures.....	3-27
3.3.2 Ceiling/Roof Insulation.....	3-29
3.3.3 Radiant Barriers.....	3-35
3.3.4 Wall Insulation	3-36
3.3.5 Floor Insulation	3-42
3.3.6 Slab Insulation	3-45
3.3.7 Compliance Options	3-47
3.4 Thermal Mass	3-55
3.4.1 Mandatory Measures.....	3-56
3.4.2 Prescriptive Requirements	3-56
3.4.3 Compliance Options	3-58
3.5 Infiltration and Air Leakage	3-58
3.5.1 Overview.....	3-58
3.5.2 Mandatory Measures.....	3-58
3.5.3 Compliance Options	3-63
3.6 Vapor Barriers and Moisture Protection.....	3-67
3.6.1 Mandatory Measures.....	3-67
3.7 Roofing Products (Cool Roof)	3-68
3.7.1 Mandatory Measures.....	3-69
3.7.2 Prescriptive Requirements	3-70
3.8 Compliance and Enforcement	3-72
3.8.1 Design	3-72
3.8.2 Construction	3-73
3.8.3 Field Verification and/or Diagnostic Testing	3-74
3.9 Glossary/Reference	3-74
4. Building HVAC Requirements.....	4-1
4.1 Overview.....	4-1
4.1.1 Introduction and Organization	4-1
4.1.2 Prescriptive Packages	4-2
4.1.3 Performance Method	4-2
4.1.4 What's New for 2008	4-2
4.1.5 Common System Types	4-3
4.1.6 Appliance Standards and Equipment Certification	4-3

4.2 Heating Equipment	4-5
4.2.1 Mandatory Measures.....	4-5
4.2.2 Prescriptive Requirements	4-9
4.2.3 Compliance Options	4-9
4.3 Cooling Equipment	4-9
4.3.1 Mandatory Measures.....	4-9
4.3.2 Prescriptive Requirements	4-14
4.3.3 Compliance Options	4-19
4.4 Air Distribution Ducts and Plenums	4-21
4.4.1 Mandatory Measures.....	4-21
4.4.2 Prescriptive Requirements	4-29
4.4.3 Compliance Options	4-30
4.4.4 Duct Installation Standards.....	4-32
4.5 Controls	4-39
4.5.1 Thermostats.....	4-39
4.5.2 Zonal Control.....	4-40
4.6 Indoor Air Quality and Mechanical Ventilation	4-43
4.6.1 Typical Solutions for Whole-Building Ventilation	4-47
4.6.2 Whole-building Ventilation Flow Rate (Section 4 of ASHRAE 62.2).....	4-50
4.6.3 Whole-Building Mechanical Ventilation Energy Consumption.....	4-56
4.6.4 Local Exhaust (Section 5 of ASHRAE 62.2).....	4-58
4.6.5 Other Requirements (Section 6 of ASHRAE 62.2)	4-62
4.6.6 Air Moving Equipment (Section 7 of ASHRAE 62.2)	4-72
4.7 Alternative Systems	4-77
4.7.1 Hydronic Heating Systems	4-77
4.7.2 Radiant Floor System	4-80
4.7.3 Evaporative Cooling	4-83
4.7.4 Ground-Source Heat Pumps	4-85
4.7.5 Solar Space Heating.....	4-86
4.7.6 Wood Space Heating.....	4-86
4.7.7 Gas Appliances	4-88
4.7.8 Evaporatively Cooled Condensers	4-89
4.7.9 Ice Storage Air Conditioners.....	4-89
4.7.10 Non-Ducted Systems.....	4-89
4.8 Compliance and Enforcement	4-90

Table of Contents	Page v
4.8.1 Design	4-90
4.8.2 Construction	4-91
4.8.3 Field Verification and/or Diagnostic Testing	4-92
4.9 Refrigerant Charge	4-93
4.9.1 Refrigerant Charge Testing	4-93
5. Water Heating Requirements.....	5-1
5.1 Overview.....	5-1
5.1.1 Water Heating Energy	5-1
5.1.2 What's New for 2008	5-2
5.1.3 Water Heater Types	5-3
5.1.4 Distribution System Types.....	5-3
5.1.5 Solar Water Heating Calculations.....	5-5
5.2 Mandatory Requirements	5-6
5.2.1 Equipment Certification	5-6
5.2.2 Equipment Efficiency	5-6
5.2.3 Pipe Insulation.....	5-7
5.2.4 Insulation Protection.....	5-9
5.2.5 Certification of Showerheads and Faucets.....	5-9
5.2.6 Storage Tank Insulation.....	5-9
5.2.7 Water Heating Recirculation Loops Serving Multiple Dwelling Units.....	5-10
5.2.8 Solar or Recovered Energy in State Buildings	5-11
5.2.9 Pool and Spa Equipment.....	5-13
5.3 Prescriptive Requirements.....	5-18
5.3.1 Pipe Insulation on Lines to Kitchen	5-18
5.3.2 Systems Serving Individual Dwelling Units.....	5-18
5.3.3 Systems Serving Multiple Dwelling Units	5-21
5.3.4 Pipe Insulation Below Grade	5-22
5.4 Compliance Options	5-22
5.4.1 Performance Compliance	5-22
5.4.2 Auxiliary Systems	5-22
5.4.3 Combined Hydronic	5-23
5.4.4 Distribution System Options	5-23
5.4.5 Instantaneous Gas Water Heaters	5-24
5.5 Compliance and Enforcement	5-24
5.5.1 Design	5-24

5.5.2	Construction	5-25
5.5.3	Field Verification and/or Diagnostic Testing	5-26
5.6	Glossary/Reference	5-27
5.6.1	Water Heater Types	5-27
5.6.2	Distribution Systems	5-28
5.6.3	Pool and Spa Equipment.....	5-32
6.	Lighting	6-1
6.1	Overview.....	6-1
6.1.1	Introduction and Scope.....	6-1
6.1.2	Summary of the Residential Lighting Standards	6-1
6.1.3	High-Rise Residential Dwelling Units and Hotel/Motel Guest Rooms	6-2
6.1.4	Fire Stations	6-3
6.1.5	Related Documents	6-3
6.2	Luminaires	6-5
6.2.1	High Efficacy Luminaires	6-5
6.2.2	Low Efficacy Luminaires.....	6-9
6.2.3	Qualifying a Lighting System as High Efficacy	6-10
6.2.4	Kitchen Luminaire Input Power.....	6-13
6.2.5	Electronic Ballasts	6-20
6.2.6	Permanently Installed and Portable Luminaires	6-21
6.2.7	Night Lights.....	6-22
6.2.8	Lighting Integral to Exhaust Fans	6-22
6.2.9	Certification to the Energy Commission	6-22
6.2.10	Light Emitting Diode (LED) Lighting Source Systems	6-24
6.3	Switching Devices and Controls	6-26
6.3.1	Certification of Residential Lighting Controls.....	6-26
6.3.2	Switching Requirements §150(k)7.....	6-26
6.3.3	Energy Management Control System.....	6-27
6.3.4	Vacancy Sensors.....	6-27
6.3.5	Residential Dimmers	6-30
6.4	Kitchens	6-32
6.4.1	Determine High Efficacy and Low Efficacy Installed Wattage	6-32
6.4.2	Kitchen Low Efficacy Tradeoff Option	6-34
6.4.3	Lighting Internal to Cabinets.....	6-35
6.4.4	Kitchen Lighting Controls.....	6-37

Table of Contents	Page vii
6.5 Bathrooms, Garages, Laundry Rooms, Closets, and Utility Rooms	6-41
6.5.1 Bathrooms	6-41
6.5.2 Garage.....	6-41
6.5.3 Laundry Room.....	6-42
6.5.4 Closets.....	6-42
6.5.5 Utility Room	6-42
6.5.6 Combined High Efficacy and Vacancy Sensor Option	6-42
6.6 Other Rooms	6-45
6.7 Outdoor Lighting	6-47
6.7.1 Temporary Override of Motion Sensor on Outdoor Luminaires.....	6-47
6.7.2 Address Signs	6-48
6.7.3 Control Requirements.....	6-48
6.7.4 Hot and Cold Environments.....	6-48
6.7.5 Exempt Outdoor Lighting.....	6-49
6.8 Parking Lots and Parking Garages.....	6-51
6.9 Common Areas of Multi-family Buildings	6-53
6.10 Luminaires Recessed in Ceilings.....	6-54
6.10.1 Luminaires in Insulated Ceilings.....	6-54
6.10.2 Ballasts for Recessed Luminaires	6-56
6.10.3 Exhaust Fans.....	6-56
6.11 Inspection Protocol for Recessed Luminaires in Insulated Ceilings	6-57
6.12 Recommendations for Luminaire Specifications.....	6-60
7. Performance Method	7-1
7.1 Overview.....	7-1
7.2 What's New for 2008	7-3
7.3 The Process.....	7-3
7.3.1 Defining the Standard Design.....	7-4
7.3.2 Standard Reports	7-4
7.3.3 Professional Judgment.....	7-7
7.4 Mixed Occupancy Buildings.....	7-7
7.5 Multifamily Buildings	7-8
7.5.1 Whole-building Compliance Approach	7-8
7.5.2 Unit-By-Unit Compliance Approach – Fixed Orientation Alternative	7-9
7.5.3 Unit-By-Unit Compliance Approach – Multiple Orientation Alternative	7-11
7.6 Subdivisions and Master Plans.....	7-11

7.6.1	Individual Building Approach	7-12
7.6.2	Multiple Orientation Alternative: No Orientation Restrictions.....	7-12
7.7	HVAC Issues	7-14
7.7.1	No Cooling Installed	7-14
7.7.2	Equipment without SEER or HSPF	7-14
7.7.3	Multiple HVAC Systems	7-14
7.7.4	Gas-Fired Cooling Systems.....	7-15
7.7.5	Existing + Addition + Alteration Approach	7-15
8.	Additions, Alterations, and Repairs.....	8-1
8.1	Introduction	8-1
8.2	Compliance Approaches.....	8-4
8.3	Building Envelope	8-5
8.3.1	Mandatory Requirements	8-6
8.3.2	Prescriptive Requirements for Additions Alone	8-7
8.3.3	Prescriptive Requirements for Alterations	8-10
8.4	HVAC.....	8-18
8.4.1	Mandatory Requirements	8-18
8.4.2	Prescriptive Requirements	8-19
8.5	Water Heating.....	8-31
8.5.1	Replacement Water Heaters	8-31
8.5.2	Additions.....	8-31
8.5.3	Alterations to Systems.....	8-32
8.6	Lighting	8-33
8.7	Performance Method: Additions & Alterations	8-35
8.7.1	Whole Building Approach	8-35
8.7.2	Addition Alone Approach	8-35
8.7.3	Existing + Addition + Alteration Approach (also applies to Existing + Alteration when there is no Addition)	8-37
9.	New Solar Homes Partnership.....	9-1
1.	Introduction	1-1
1.1	Related Documents	1-1
1.2	The Technical Chapters.....	1-2
1.3	Why California Needs Energy Efficiency Standards.....	1-3
1.4	What's New for 2008	1-5

Table of Contents	Page ix
1.5 Scope and Application	1-7
1.5.1 Building Types	1-7
1.5.2 Historical Buildings	1-9
1.5.3 Exempt Buildings	1-11
1.5.4 Building Systems Covered	1-12
1.5.5 Additions, Alterations and Repairs	1-12
1.6 Mandatory Measures and Compliance Approaches	1-16
1.6.1 Mandatory Measures	1-17
1.6.2 Prescriptive Packages	1-17
1.6.3 Performance Approach	1-18
1.7 Climate Zones	1-19
1.7.1 Building Location Data	1-19
1.8 Conditioned Floor Area	1-20
1.9 Where to Get Help	1-21
1.9.1 Energy Commission Publications and Support	1-21
1.9.2 Training Opportunities	1-23
1.9.3 Energy Consultants	1-24
1.9.4 Online Videos	1-24
1.9.5 HERS Raters and Providers	1-24
2. Compliance and Enforcement	2-1
2.1 Overview	2-1
2.2 Compliance and Enforcement Phases	2-2
2.2.1 Design Phase	2-3
2.2.2 Permit Application	2-4
2.2.3 Plan Check	2-5
2.2.4 Building Permit	2-6
2.2.5 Construction Phase	2-6
2.2.6 Enforcement Agency Field Inspection	2-7
2.2.7 Field Verification and/or Diagnostic Testing	2-8
2.2.8 Approval for Occupancy	2-10
2.2.9 Occupancy	2-10
2.3 Energy Standards Compliance Documentation	2-10
2.3.1 Building Permit Phase Documentation	2-11
2.3.2 Construction Phase Documentation (CF-6R)	2-12
2.3.3 Field Verification and/or Diagnostic Testing Documentation (CF-4R)	2-15

2.3.4	Compliance, Operating, and Maintenance, and Ventilation Information to be Provided by Builder.....	2-15
2.4	Roles and Responsibilities.....	2-17
2.4.1	Designer	2-17
2.4.2	Documentation Author.....	2-18
2.4.3	Builder or General Contractor.....	2-19
2.4.4	Specialty Subcontractors.....	2-20
2.4.5	Enforcement Agency	2-21
2.4.6	HERS Provider	2-24
2.4.7	HERS Rater.....	2-25
2.4.8	Third Party Quality Control Program	2-28
2.4.9	Owner	2-29
2.5	HERS Field Verification and Diagnostic Testing.....	2-30
2.5.1	Measures Requiring HERS Field Verification and Diagnostic Testing	2-30
2.5.2	Verification, Testing and Sampling	2-31
2.5.3	Initial Model Field Verification and Diagnostic Testing	2-32
2.5.4	Group Sample Field Verification and Diagnostic Testing	2-32
2.5.5	Re-sampling, Full Testing and Corrective Action	2-34
2.5.6	Installer Requirements and HERS Procedures for Alterations	2-35
2.5.7	For More Information	2-36
3.	Building Envelope Requirements	3-1
3.1	Overview.....	3-1
3.1.1	Introduction.....	3-1
3.1.2	Building Orientation	3-2
3.1.3	What's New for 2008	3-2
	Default Temporary Label	3-3
3.2	Fenestration.....	3-4
3.2.1	Relevant Sections in the Standards	3-4
3.2.2	Mandatory Measures.....	3-5
3.2.3	Prescriptive Requirements	3-13
3.2.4	Compliance Options	3-18
3.2.5	Compliance and Enforcement	3-25
3.3	Insulation	3-27
3.3.1	Insulation General Mandatory Measures.....	3-27
3.3.2	Ceiling/Roof Insulation.....	3-29
3.3.3	Radiant Barriers.....	3-35

Table of Contents	Page xi
3.3.4 Wall Insulation	3-36
3.3.5 Floor Insulation	3-42
3.3.6 Slab Insulation	3-45
3.3.7 Compliance Options	3-47
3.4 Thermal Mass	3-55
3.4.1 Mandatory Measures.....	3-56
3.4.2 Prescriptive Requirements	3-56
3.4.3 Compliance Options	3-58
3.5 Infiltration and Air Leakage	3-58
3.5.1 Overview.....	3-58
3.5.2 Mandatory Measures.....	3-58
3.5.3 Compliance Options	3-63
3.6 Vapor Barriers and Moisture Protection.....	3-67
3.6.1 Mandatory Measures.....	3-67
3.7 Roofing Products (Cool Roof).....	3-68
3.7.1 Mandatory Measures.....	3-69
3.7.2 Prescriptive Requirements	3-70
3.8 Compliance and Enforcement	3-72
3.8.1 Design	3-72
3.8.2 Construction	3-73
3.8.3 Field Verification and/or Diagnostic Testing	3-74
3.9 Glossary/Reference	3-74
4. Building HVAC Requirements.....	4-1
4.1 Overview.....	4-1
4.1.1 Introduction and Organization	4-1
4.1.2 Prescriptive Packages	4-2
4.1.3 Performance Method	4-2
4.1.4 What's New for 2008	4-2
4.1.5 Common System Types	4-3
4.1.6 Appliance Standards and Equipment Certification	4-3
4.2 Heating Equipment	4-5
4.2.1 Mandatory Measures.....	4-5
4.2.2 Prescriptive Requirements	4-9
4.2.3 Compliance Options	4-9
4.3 Cooling Equipment	4-9

4.3.1	Mandatory Measures.....	4-9
4.3.2	Prescriptive Requirements	4-14
4.3.3	Compliance Options	4-19
4.4	Air Distribution Ducts and Plenums	4-21
4.4.1	Mandatory Measures.....	4-21
4.4.2	Prescriptive Requirements	4-29
4.4.3	Compliance Options	4-30
4.4.4	Duct Installation Standards.....	4-32
4.5	Controls	4-39
4.5.1	Thermostats.....	4-39
4.5.2	Zonal Control.....	4-40
4.6	Indoor Air Quality and Mechanical Ventilation	4-43
4.6.1	Typical Solutions for Whole-Building Ventilation	4-47
4.6.2	Whole-building Ventilation Flow Rate (Section 4 of ASHRAE 62.2).....	4-50
4.6.3	Whole-Building Mechanical Ventilation Energy Consumption.....	4-56
4.6.4	Local Exhaust (Section 5 of ASHRAE 62.2).....	4-58
4.6.5	Other Requirements (Section 6 of ASHRAE 62.2)	4-62
4.6.6	Air Moving Equipment (Section 7 of ASHRAE 62.2)	4-72
4.7	Alternative Systems	4-77
4.7.1	Hydronic Heating Systems	4-77
4.7.2	Radiant Floor System	4-80
4.7.3	Evaporative Cooling	4-83
4.7.4	Ground-Source Heat Pumps	4-85
4.7.5	Solar Space Heating.....	4-86
4.7.6	Wood Space Heating.....	4-86
4.7.7	Gas Appliances	4-88
4.7.8	Evaporatively Cooled Condensers	4-89
4.7.9	Ice Storage Air Conditioners.....	4-89
4.7.10	Non-Ducted Systems.....	4-89
4.8	Compliance and Enforcement	4-90
4.8.1	Design	4-90
4.8.2	Construction	4-91
4.8.3	Field Verification and/or Diagnostic Testing	4-92
4.9	Refrigerant Charge	4-93
4.9.1	Refrigerant Charge Testing	4-93

Table of Contents	Page xiii
5. Water Heating Requirements.....	5-1
5.1 Overview.....	5-1
5.1.1 Water Heating Energy	5-1
5.1.2 What's New for 2008	5-2
5.1.3 Water Heater Types	5-3
5.1.4 Distribution System Types.....	5-3
5.1.5 Solar Water Heating Calculations.....	5-5
5.2 Mandatory Requirements	5-6
5.2.1 Equipment Certification	5-6
5.2.2 Equipment Efficiency	5-6
5.2.3 Pipe Insulation.....	5-7
5.2.4 Insulation Protection.....	5-9
5.2.5 Certification of Showerheads and Faucets.....	5-9
5.2.6 Storage Tank Insulation.....	5-9
5.2.7 Water Heating Recirculation Loops Serving Multiple Dwelling Units.....	5-10
5.2.8 Solar or Recovered Energy in State Buildings	5-11
5.2.9 Pool and Spa Equipment.....	5-13
5.3 Prescriptive Requirements.....	5-18
5.3.1 Pipe Insulation on Lines to Kitchen	5-18
5.3.2 Systems Serving Individual Dwelling Units.....	5-18
5.3.3 Systems Serving Multiple Dwelling Units	5-21
5.3.4 Pipe Insulation Below Grade	5-22
5.4 Compliance Options	5-22
5.4.1 Performance Compliance	5-22
5.4.2 Auxiliary Systems	5-22
5.4.3 Combined Hydronic.....	5-23
5.4.4 Distribution System Options	5-23
5.4.5 Instantaneous Gas Water Heaters	5-24
5.5 Compliance and Enforcement	5-24
5.5.1 Design	5-24
5.5.2 Construction	5-25
5.5.3 Field Verification and/or Diagnostic Testing	5-26
5.6 Glossary/Reference	5-27
5.6.1 Water Heater Types	5-27
5.6.2 Distribution Systems.....	5-28

5.6.3	Pool and Spa Equipment.....	5-32
6.	Lighting	6-1
6.1	Overview.....	6-1
6.1.1	Introduction and Scope.....	6-1
6.1.2	Summary of the Residential Lighting Standards	6-1
6.1.3	High-Rise Residential Dwelling Units and Hotel/Motel Guest Rooms	6-2
6.1.4	Fire Stations	6-3
6.1.5	Related Documents	6-3
6.2	Luminaires	6-5
6.2.1	High Efficacy Luminaires	6-5
6.2.2	Low Efficacy Luminaires.....	6-9
6.2.3	Qualifying a Lighting System as High Efficacy	6-10
6.2.4	Kitchen Luminaire Input Power.....	6-13
6.2.5	Electronic Ballasts	6-20
6.2.6	Permanently Installed and Portable Luminaires	6-21
6.2.7	Night Lights.....	6-22
6.2.8	Lighting Integral to Exhaust Fans	6-22
6.2.9	Certification to the Energy Commission	6-22
6.2.10	Light Emitting Diode (LED) Lighting Source Systems	6-24
6.3	Switching Devices and Controls	6-26
6.3.1	Certification of Residential Lighting Controls.....	6-26
6.3.2	Switching Requirements §150(k)7.....	6-26
6.3.3	Energy Management Control System.....	6-27
6.3.4	Vacancy Sensors.....	6-27
6.3.5	Residential Dimmers	6-30
6.4	Kitchens	6-32
6.4.1	Determine High Efficacy and Low Efficacy Installed Wattage	6-32
6.4.2	Kitchen Low Efficacy Tradeoff Option	6-34
6.4.3	Lighting Internal to Cabinets.....	6-35
6.4.4	Kitchen Lighting Controls.....	6-37
6.5	Bathrooms, Garages, Laundry Rooms, Closets, and Utility Rooms	6-41
6.5.1	Bathrooms	6-41
6.5.2	Garage.....	6-41
6.5.3	Laundry Room	6-42
6.5.4	Closets.....	6-42

Table of Contents	Page xv
6.5.5 Utility Room	6-42
6.5.6 Combined High Efficacy and Vacancy Sensor Option	6-42
6.6 Other Rooms	6-45
6.7 Outdoor Lighting	6-47
6.7.1 Temporary Override of Motion Sensor on Outdoor Luminaires.....	6-47
6.7.2 Address Signs	6-48
6.7.3 Control Requirements.....	6-48
6.7.4 Hot and Cold Environments.....	6-48
6.7.5 Exempt Outdoor Lighting.....	6-49
6.8 Parking Lots and Parking Garages.....	6-51
6.9 Common Areas of Multi-family Buildings	6-53
6.10 Luminaires Recessed in Ceilings.....	6-54
6.10.1 Luminaires in Insulated Ceilings.....	6-54
6.10.2 Ballasts for Recessed Luminaires	6-56
6.10.3 Exhaust Fans.....	6-56
6.11 Inspection Protocol for Recessed Luminaires in Insulated Ceilings	6-57
6.12 Recommendations for Luminaire Specifications.....	6-60
7. Performance Method	7-1
7.1 Overview.....	7-1
7.2 What's New for 2008	7-3
7.3 The Process.....	7-3
7.3.1 Defining the Standard Design.....	7-4
7.3.2 Standard Reports	7-4
7.3.3 Professional Judgment	7-7
7.4 Mixed Occupancy Buildings.....	7-7
7.5 Multifamily Buildings	7-8
7.5.1 Whole-building Compliance Approach	7-8
7.5.2 Unit-By-Unit Compliance Approach – Fixed Orientation Alternative	7-9
7.5.3 Unit-By-Unit Compliance Approach – Multiple Orientation Alternative	7-11
7.6 Subdivisions and Master Plans.....	7-11
7.6.1 Individual Building Approach	7-12
7.6.2 Multiple Orientation Alternative: No Orientation Restrictions.....	7-12
7.7 HVAC Issues	7-14
7.7.1 No Cooling Installed	7-14
7.7.2 Equipment without SEER or HSPF	7-14

7.7.3	Multiple HVAC Systems	7-14
7.7.4	Gas-Fired Cooling Systems.....	7-15
7.7.5	Existing + Addition + Alteration Approach	7-15
8.	Additions, Alterations, and Repairs.....	8-1
8.1	Introduction.....	8-1
8.2	Compliance Approaches.....	8-4
8.3	Building Envelope	8-5
8.3.1	Mandatory Requirements	8-6
8.3.2	Prescriptive Requirements for Additions Alone	8-7
8.3.3	Prescriptive Requirements for Alterations	8-10
8.4	HVAC.....	8-18
8.4.1	Mandatory Requirements	8-18
8.4.2	Prescriptive Requirements	8-19
8.5	Water Heating.....	8-31
8.5.1	Replacement Water Heaters	8-31
8.5.2	Additions.....	8-31
8.5.3	Alterations to Systems.....	8-32
8.6	Lighting	8-33
8.7	Performance Method: Additions & Alterations	8-35
8.7.1	Whole Building Approach	8-35
8.7.2	Addition Alone Approach	8-35
8.7.3	Existing + Addition + Alteration Approach (also applies to Existing + Alteration when there is no Addition)	8-37
9.	New Solar Homes Partnership.....	9-1